

I. Amendments to the Claims:

The following Listing of Claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently amended) A multiple component liquid plastisol/hot melt hybrid adhesive composition comprised of a polymeric reinforcing phase component and an adsorbent phase component, both as heterogeneously dispersed particulates within a liquid component, wherein the reinforcing phase component is substantially incompatible with the liquid component, the adsorbent phase component is compatible or substantially more compatible with the liquid component than is the reinforcing phase component, and the reinforcing phase and adsorbent phase components are partially compatible with one another, the composition being chlorine free and having the rheological characteristics of a liquid dispersion at room temperature and being capable of forming a molten blend at elevated temperatures that solidifies into a non-exuding solid adhesive upon cooling.

2. (Original) The adhesive composition of claim 1 wherein the dispersed particulates are comprised of a mixture of separate and chemically discrete particulate types, at least one of the particulate types being comprised of substantially the same matter as that which comprises the reinforcing phase component in the fused, solid adhesive, and at least one of the particulate types being comprised of substantially the same matter as that which comprises the adsorbent phase component in the fused, solid adhesive.

3. (Original) The adhesive composition of claim 1 wherein the dispersed particulates are comprised of a core surrounded by a shell, the core being comprised of substantially the same matter as that which comprises the reinforcing phase component in the fused, solid adhesive, and the shell being comprised of substantially the same

matter as that which comprises the adsorbent phase component in the fused, solid adhesive.

4. (Currently amended) The adhesive composition of claim 1 wherein the dispersed particulates are insoluble ~~[[to]]~~ in the liquid component ~~adsorption~~ at temperatures below 150°F.

5. (Previously presented) The adhesive composition of claim 1 wherein the liquid component is comprised of either one or more in combination of a chemically non-reactive liquid compound, a chemically reactive liquid compound, or a mixture thereof; the reinforcing phase component is comprised of one or more polyolefin homopolymers, polyolefin copolymers, or mixtures thereof; and the adsorbent phase component is comprised of a polyolefin homopolymer, a polyolefin copolymer, a mono carboxylic acid compound, a dicarboxylic acid compound, a tricarboxylic acid compound, or mixtures thereof.

6. (Original) The adhesive composition of claim 1 where the ratio of the reinforcing phase component to the adsorbent phase component is greater than unity.

7. (Original) The adhesive composition of claim 1 which is further comprised of one or more additional components selected from the group consisting of a thermal stabilizer, a tackifier resin, micron sized inorganic particulates, nanometer sized inorganic particulates, pigments, a thermal initiator, a blowing agent, a photoinitiator, or any other reaction catalyst, and where said one or more additional components are either dispersed or dissolved in the liquid component of the adhesive composition.

8. (Original) The adhesive composition of claim 1 wherein the adhesive in its solid form is a thermoplastic or thermoset.

9. (Original) The adhesive composition of claim 1 where the reinforcing phase component is comprised of either one or more in combination of a poly(ethylene-co-vinylacetate) copolymer, a poly(ethylene-co-methacrylic acid) copolymer, a poly(ethylene-co-maleic anhydride) block or graft copolymer, a poly(ethylene-co-vinyl acetate-co-acrylic acid) terpolymer, a poly(ethylene-co-vinyl acetate-co-methacrylic acid) terpolymer, a poly(ethylene-co-vinyl acetate-co-maleic anhydride) block or graft terpolymer, or mixtures thereof.

10. (Original) The adhesive composition of claim 1 where the reinforcing phase component is comprised of either one or more in combination of a poly(ethylene-co-vinylacetate) copolymer having a VA level of greater than 1% but less than 18%, a poly(ethylene-co-vinyl acetate-co-acrylic acid) terpolymer having a VA level of greater than 1% but less than 18% and an acrylic acid level of less than 8%, a poly(ethylene-co-vinyl acetate-co-methacrylic acid) terpolymer having a VA level of greater than 1% but less than 18% and a methacrylic acid level of less than 8%, a poly(ethylene-co-vinyl acetate-co-maleic anhydride) block or graft terpolymer having a VA level of greater than 1% but less than 18% and a maleic anhydride level of less than 8%, or mixtures thereof.

11. (Original) The adhesive composition of claim 1 wherein the reinforcing phase component forms a core of a core-shell particle and is comprised of either one or more in combination of a poly(ethylene-co-vinylacetate) copolymer having a VA level of greater than 1% but less than 50%, a poly(ethylene-co-vinyl acetate-co-acrylic acid) terpolymer having a VA level of greater than 1% but less than 50% and an acrylic acid level of less than 8%, a poly(ethylene-co-vinyl acetate-co-methacrylic acid) terpolymer having a VA level of greater than 1% but less than 50% and a methacrylic acid level of less than 8%, a poly(ethylene-co-vinyl acetate-co-maleic anhydride) block or graft terpolymer having a VA level of greater than 1% but less than 50% and a maleic anhydride level of less than 8%, or mixtures thereof.

12. (Original) The adhesive composition of claim 1 where the adsorbent phase component is comprised of either one or more in combination of a polypropylene homopolymer, a polypropylene copolymer, a poly(propylene-co-ethylene) copolymer, a poly(propylene-co-maleic anhydride) block or graft copolymer, a polyethylene polymer, stearic acid, palmitic acid, lauric acid, benzoic acid, sebacic acid, dodecanedioic acid, azelaic acid, adipic acid, phthalic acid, a pentaerythritol rosin ester, a terpene resin, a glycerol rosin ester, a polycaprolactone, a hydrocarbon wax, or mixtures thereof.

13. (Original) The adhesive composition of claim 1 where the adsorbent phase component forms a shell of a core-shell particle and is comprised of either one or more in combination of a polypropylene homopolymer, a polypropylene copolymer, a poly(propylene-co-ethylene) copolymer, a poly(propylene-co-maleic anhydride) block or graft copolymer, a polyethylene polymer, stearic acid, palmitic acid, lauric acid, benzoic acid, sebacic acid, dodecanedioic acid, azelaic acid, adipic acid, phthalic acid, a pentaerythritol rosin ester, a terpene resin, a glycerol rosin ester, a polycaprolactone, a hydrocarbon wax, or mixtures thereof.

14. (Previously presented) The adhesive composition of claim 1 where the liquid phase component is comprised of one or more liquids, alone or in combination, selected from the group consisting of mineral oil, a vegetable oil such as soy or epoxidized soy oil, oleic acid or its esters, isostearic acid and its esters, lactic acid and its esters, esters of dicarboxylic acids such as dibutylphthalate, dioctylphthalate, diisononylphthalate, dioctyladipate, and dioctylsebacate, a reactive acrylic monomer or oligomer, a reactive epoxy monomer or oligomer, a reactive mono or diamine, a reactive isocyanate monomer or oligomer, and mixtures thereof.

15. (Original) The adhesive composition of claim 1 where the adsorbent phase component is comprised of either a poly(propylene-co-maleic anhydride) copolymer, a polyethylene homopolymer, a polypropylene homopolymer, a polycaprolactone polymer, a tricarboxylic acid compound, dicarboxylic acid compound,

a monocarboxylic acid compound, a rosin ester, a hydrocarbon resin, or a mixture thereof; where the reinforcing phase component is comprised of either a poly(ethylene-co-vinyl acetate) copolymer, a poly(ethylene-co-vinyl acetate-co-methacrylic acid) terpolymer, a poly(ethylene-co-vinyl acetate-co-acrylic acid) terpolymer, a poly(ethylene-co-vinyl acetate-co-maleic anhydride) terpolymer, or a mixture thereof; where the liquid phase component is comprised of either mineral oil, a vegetable oil, an ester of a dicarboxylic acid, an ester of a monocarboxylic acid, or a mixture thereof; wherein said composition is further comprised of either tackifier resins, thermal stabilizers, micron sized or nanometer sized inorganic particulates such as calcium carbonate, talc, aluminum oxide and its hydrates, aluminum silicates, magnesium silicates, montmorillonite, titanium dioxide, zinc oxide, iron oxide, a foaming agent, or mixtures thereof; wherein the ratio of the reinforcing phase and adsorbent phase components is greater than unity; and where the ratio of the liquid phase component to the sum of all other components is sufficient so as to enable the composition to exist as a liquid dispersion under ambient conditions.

16. (Original) The adhesive composition of claim 1, further comprised of exfoliated nanoparticles.

17. (Original) The adhesive composition of claim 16 wherein said nanoparticles are surface treated.

18. (Original) The adhesive composition of claim 1, further comprised of aggregated or partially exfoliated nanoparticles.

19. (Original) The adhesive composition of claim 1 where the adsorbent phase component is comprised of a compound that imparts release characteristics to a finished article formed from the composition.

20. (Original) The adhesive composition of claim 19 where the adsorbent phase component is comprised of N,N'-ethylenebisstearamide.

21. (Original) The adhesive composition of claim 12 where the adsorbent phase component is comprised of maleated polypropylene.

22. (Previously presented) A multiple component liquid plastisol/hot melt hybrid adhesive composition comprised of heterogeneously dispersed particulates within a liquid phase component, where said composition has the rheological characteristics of a liquid dispersion at room temperature, and where said composition can be fused at elevated temperatures to form a molten blend that solidifies into a solid adhesive upon cooling; wherein said adhesive is comprised of a poly(ethylene-co-vinyl acetate) reinforcing phase component; a poly(propylene-co-maleic anhydride) adsorbent phase component; a mineral oil liquid phase component; a thermal stabilizer; and a dicarboxylic acid compound.

23. (Original) The adhesive composition of claim 22 where the adsorbent phase is further comprised of polypropylene.

24. (Original) The adhesive composition of claim 22, wherein the dicarboxylic acid compound is comprised of sebacic or dodecanedioic acid.

25. (Original) The adhesive composition of claim 22, wherein the dicarboxylic acid compound is dispersed or dissolved in the liquid phase of the liquid dispersion.

26. (Original) The adhesive composition of claim 22 further comprised of at least partially exfoliated nanoparticles.

27. (Original) The adhesive composition of claim 22 further comprised of a chemical foaming agent.

28. (Original) The adhesive composition of claim 22 wherein the dispersed particulates are comprised of a mixture of separate and chemically discrete particulate types; where at least one of the particulate types is comprised of substantially the same matter as that which comprises the reinforcing phase component in the fused, solid adhesive; and where at least one of the particulate types is comprised of substantially the same matter as that which comprises the adsorbent phase component in the fused, solid adhesive.

29. (Canceled)

30. (Canceled)

31. (Canceled)

32. (Canceled)

33. (Canceled)

34. (Canceled)

35. (Canceled)

36. (Canceled)

37. (Currently amended) A liquid plastisol/hot melt hybrid multiple component composition comprised of heterogeneously dispersed particulates within a liquid phase component, where said composition has the rheological characteristics of a liquid dispersion at room temperature, wherein said composition can be fused at elevated temperatures and then solidified into a non-exuding solid plastic material upon cooling;

wherein said plastic material composition is chlorine free and comprises a polymeric reinforcing phase component, an adsorbent phase component, and an adsorbed liquid component; such that the reinforcing phase component is substantially incompatible with the liquid component of the plastic material composition, and the reinforcing phase and adsorbent phase components are partially compatible with one another.

38. (Original) The multiple component composition of claim 37, wherein the dispersed particulates are comprised of a mixture of separate and chemically discrete particulate types, at least one of which is comprised of substantially the same matter as that which comprises the reinforcing phase component in the fused solid plastic, and wherein at least one of the particulate types is comprised of substantially the same matter as that which comprises the adsorbent phase component in the fused plastic or coating.

39. (Original) The adhesive composition of claim 1, further comprised of a chemical blowing agent.

40. (Canceled)

41. (Canceled)

42. (Canceled)

43. (Canceled)

44. (Canceled)

45. (Original) The composition of claim 37, further comprising exfoliated nanoparticles.

46. (Original) The composition of claim 37, further comprising aggregated or partially exfoliated nanoparticles.

47. (New) The adhesive composition of claim 1, where the adsorbent phase component is comprised of one or more of a poly(propylene-co-maleic anhydride) copolymer, a polyethylene homopolymer, a polypropylene homopolymer, a polycaprolactone polymer, a polyethylene copolymer, a nylon polymer, a polyvinyl alcohol polymer or copolymer, a polypropylene copolymer, a polystyrene copolymer, a tricarboxylic acid compound, a dicarboxylic acid compound, a monocarboxylic acid compound, stearic acid, azelaic acid, benzoic acid, citric acid, tartaric acid, biotin, niacin, dodecanedioic acid, sebacic acid, palmitic acid, lauric acid, adipic acid, phthalic acid, a rosin ester, a pentaerythritol rosin ester, a glycerol rosin ester, a hydrocarbon resin, a hydrocarbon wax, a terpene resin; where the reinforcing phase component is comprised of one or more of a poly(ethylene-co-vinyl acetate) copolymer, a poly(ethylene-co-vinyl acetate-co-methacrylic acid) terpolymer, a poly(ethylene-co-vinyl acetate-co-acrylic acid) terpolymer, a poly(ethylene-co-vinyl acetate-co-maleic anhydride) terpolymer, a maleated polyethylene copolymer, a polyolefin copolymer prepared with two or more olefinic monomers selected from the group consisting of ethylene, butylene, propylene, and butadiene, a polyolefin copolymer prepared with one or more olefinic monomers in combination with one or more vinyl monomers selected from the group consisting of vinyl acetate, methyl acrylate, methyl methacrylate, butyl acrylate, styrene, maleic anhydride, maleic acid, acrylic acid, methacrylic acid, vinyl methyl ether, allyl glycidyl ether, and trimethylolpropanemonoallylether, a polyamide polymer, a polyvinylpyrrolidone copolymer, an alcohol functionalized polymer selected from the group consisting of a polyvinyl alcohol copolymer, polyvinyl alcohol, polyvinylbutyral, polyvinylformal, polyethylene vinyl alcohol, an acid functional polymer, an anhydride functional polymer; where the liquid phase component is comprised of one or more liquids, alone or in combination, selected from the group consisting of mineral oil, a vegetable oil such as soy or epoxidized soy oil, esters of natural fatty acids, oleic acid or its esters, methyloleate, glyceroldioleate, isostearic acid and its

esters, lactic acid and its esters, esters of dicarboxylic acids, hydrocarbon esters of adipic acid, hydrocarbon esters of sebacic acid, esters of monoacids, a trialkoxysilane, a hydrolyzed trialkoxysilane, an oligomerized trialkoxysilane, glycerol, ethylene glycol, propylene glycol, a reactive acrylic monomer or oligomer, a reactive epoxy monomer or oligomer, a reactive mono or diamine, a reactive isocyanate monomer or oligomer; and wherein the ratio of the reinforcing phase and adsorbent phase components is greater than unity; and where the ratio of the liquid phase component to the sum of all other components is sufficient so as to enable the composition to exist as a liquid dispersion under ambient conditions.

48. (New) The adhesive composition of claim 1, wherein the liquid component is chemically non-reactive.

49. (New) The adhesive composition of claim 1, wherein the liquid component is chemically reactive and remains substantially unreacted until after said adhesive solidifies into a non-exuding solid adhesive upon cooling.

50. (New) The adhesive composition of claim 1, wherein the liquid component is chemically reactive, wherein optionally one or both of the reinforcing and adsorbent phase components are chemically reactive, wherein the reactive liquid component is capable of undergoing a chemical reaction either with itself, with one or both of said optionally chemically reactive components, or with itself in combination with one or both of said optionally chemically reactive components, and wherein each of the chemically reactive and optionally chemically reactive components remains substantially unreacted until after said adhesive composition solidifies into a non-exuding solid adhesive upon cooling.

51. (New) The adhesive composition of claim 1, wherein one or more of the liquid, reinforcing phase, and adsorbent phase components is chemically reactive, wherein the adhesive composition is further comprised of a curing agent catalyst that

initiates the reaction of the one or more chemically reactive components, and wherein each of the chemically reactive components and the curing agent catalyst remain substantially unreacted until after said adhesive composition solidifies into a non-exuding solid adhesive upon cooling.

52. (New) The adhesive composition of claim 51, wherein the curing agent catalyst and the one or more chemically reactive components undergo either a moisture initiated cure reaction, a UV light initiated cure reaction, or a visible light initiated cure reaction to chemically crosslink the adhesive composition after the adhesive composition solidifies into a non-exuding solid adhesive upon cooling.

53. (New) A liquid plastisol/hot melt hybrid adhesive composition which is initially liquid at room temperature, becomes a molten solution at an elevated temperature, becomes a non-exuding thermoplastic solid adhesive upon cooling, and which is chlorine free.

54. (New) The composition of claim 53, that is capable of producing fiber tear adhesion when bonded to paper stock, such that forcing a tearing failure would result in cohesive failure in the paper stock.

55. (New) The composition of claim 53 comprising exfoliated nanoparticles.

56. (New) The composition of claim 53 comprising aggregated or partially exfoliated nanoparticles.

57. (New) A liquid plastisol/hot melt hybrid adhesive composition which is initially stable as a liquid at temperatures less than 150°F, becomes a molten solution at an elevated temperature, and becomes a non-exuding thermoplastic solid adhesive upon cooling.

58. (New) A liquid plastisol/hot melt hybrid adhesive composition that, at room temperature, has the rheological characteristics of a liquid dispersion and is shelf stable, that forms a molten blend at an elevated temperature, that solidifies into a non-exuding solid adhesive upon cooling, and that may be re-melted to form a hot melt adhesive.

59. (New) The composition of claim 58 that is shelf stable as a liquid for a period of at least 1 year at room temperature.

60. (New) A liquid plastisol/hot melt hybrid adhesive composition that has the rheological characteristics of a liquid dispersion at room temperature, that forms a molten blend at an elevated temperature and is thermally stable at such elevated temperature for in excess of 5 hours, and that solidifies into a non-exuding solid adhesive upon cooling.

61. (New) A liquid plastisol/hot melt hybrid adhesive composition that, at room temperature, is comprised of a dispersed particulates within a liquid component and has the rheological characteristics of a liquid dispersion, that forms a molten blend at an elevated temperature, and that solidifies into a non-exuding solid adhesive upon cooling, the liquid component exhibiting low volatility at both room temperature and at the elevated temperature at which the molten blend is formed.

62. (New) A multiple component liquid plastisol/hot melt hybrid adhesive composition having the rheological characteristics of a liquid dispersion at room temperature, and being capable of forming a molten blend at an elevated temperature that solidifies into a non-exuding solid adhesive upon cooling, wherein said composition is comprised of a polymeric reinforcing phase component and an adsorbent phase component, both dispersed as heterogeneous particulates within a liquid component to form a stable liquid dispersion, wherein the reinforcing phase component is substantially incompatible with the liquid component, the adsorbent phase component

is a crystalline or a semicrystalline material with a melt point higher than the highest anticipated storage temperature for the liquid dispersion and is incompatible with the liquid component below said melt point but is compatible or substantially more compatible with the liquid component than the reinforcing phase component when said adsorbent phase component is melted and recrystallized, and the reinforcing phase and adsorbent phase components are partially compatible with one another when said components are molten and blended together.

63. (New) A multiple component liquid plastisol/hot melt hybrid adhesive composition comprised of a polymeric reinforcing phase component and an adsorbent phase component, both as heterogeneously dispersed particulates within a liquid component, wherein the reinforcing phase component is substantially incompatible with the liquid component, the adsorbent phase component is compatible or substantially more compatible with the liquid component than is the reinforcing phase component, and the reinforcing phase and adsorbent phase components are partially compatible with one another, the composition having the rheological characteristics of a liquid dispersion at room temperature, and being capable of forming a molten blend at elevated temperatures that solidifies into a non-exuding solid adhesive upon cooling, wherein said adhesive composition is capable of producing fiber tear adhesion when bonded to paper stock, such that forcing a tearing failure would result in cohesive failure in the paper stock.